

THE EFFECTS OF BRIEF AND EXTENDED STIMULUS AVAILABILITY ON PREFERENCE

JODY STEINHILBER AND CAMMARIE JOHNSON

NEW ENGLAND CENTER FOR CHILDREN AND
NORTHEASTERN UNIVERSITY

The effects of stimulus availability on preference were evaluated using two conditions of a modified preference assessment. Different preference hierarchies were found in 15-s access conditions than in 15-min access conditions. Subsequent comparisons of a short-availability high-preference stimulus and a long-availability high-preference stimulus verified differential preferences for stimuli based on duration of availability.

DESCRIPTORS: concurrent chains, developmental disabilities, preference assessment, reinforcer duration

Previous research has led to the development of a variety of assessments to identify preferred reinforcers for individuals with developmental disabilities. These assessments generally evaluate preference in the context of relatively brief access to selected stimuli, ranging from approximately 5 s to 5 min (DeLeon & Iwata, 1996; Fisher et al., 1992; Hanley, Iwata, Lindberg, & Conners, 2003; Roane, Vollmer, Ringdahl, & Marcus, 1998). The generality of preference assessment outcomes is unknown when stimulus availability differs between the assessment context and the natural environment. The purpose of the current study was to assess preference for items when access to these items was relatively brief or relatively long to determine if the duration of postselection access would affect preference rankings.

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Address correspondence to Jody Steinhilber, Wellesley Public Schools, 50 Kingsbury Street, Wellesley, Massachusetts 02481, or Cammarie Johnson, New England Center for Children, 33 Turnpike Road, Southborough, Massachusetts 01772 (e-mail: jody-steinhilber@wellesley.nec.edu or cjohnson@necc.org).

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EXPERIMENT 1: PREFERENCE ASSESSMENT

Method

Participants, setting, and materials. Participants were Larry (12 years old) and Zed (11 years old), who both had been diagnosed with an autism spectrum disorder. Both had vocal speech, engaged in simple conversations, and followed multistep instructions. All sessions were conducted in a room (2.4 m by 3.7 m) at the participants' residence. Seven leisure items were used in all preference assessments. Approximately half of the items were included based on caregiver report of preference (Fisher, Piazza, Bowman, & Amari, 1996), and the rest were included based on staff observations of participants' interaction with the items. Across all conditions, access to stimuli was restricted outside the experimental sessions.

Experimental design and procedure. Two preference assessments were conducted within a multielement design, with four to seven repetitions of each preference assessment conducted for each participant. Both assessments were based on the multiple-stimulus without replacement (MSWO) method described by DeLeon and Iwata (1996). In the MSWO-short assessment, items were available for 15 s after their selection. By contrast, in the MSWO-long assessment, items were available for 15 min

following their selection (15 min was chosen because in the natural setting these participants were typically given access to materials for this duration during token trade-in times). After an item had been delivered (for either 15 s or 15 min), it was removed from the array of stimuli used in the assessment, and the assessment continued with the remaining items (based on the procedures described by DeLeon & Iwata).

Response measurement and reliability. The dependent variable was item selection, which was recorded when a participant made physical contact with his hand and one of the presented items. Interobserver agreement was assessed in 48% of sessions, evenly distributed across participants and conditions, and was calculated on a trial-by-trial basis. Agreement for item selections was calculated by dividing the number of trials with agreements (on the occurrence or nonoccurrence of a response) by the number of trials with agreements plus those with disagreements and multiplying by 100%. Agreement for all preference assessments was 100%.

Data analysis. Two ranked preference hierarchies were generated for each participant based on selection order in the MSWO-short assessment and the MSWO-long assessment. Ranks were calculated according to the method of DeLeon and Iwata (1996).

Results and Discussion

Disparate preference hierarchies for some stimuli were established across the preference assessments for both participants (Figure 1). Larry's preferences were less affected by access time, however, with no difference in top- and bottom-ranked stimuli and no more than a one-rank difference observed for any stimulus. Greater discrepancies in hierarchies between preference rankings when access to the stimuli was brief (15 s) and extended (15 min) were observed with Zed. He showed no correspondence in rank for any stimulus, including the top- and bottom-ranked stimuli, and the

differences in rank were as great as a 3.5-rank difference within a stimulus (see the data for the compact disc in Figure 1).

EXPERIMENT 2: REINFORCER ASSESSMENT

Experiment 2 further examined the influence of postselection access to stimuli by assessing relative preference for the MSWO-long high-preference item (LHP) relative to the MSWO-short high-preference item (SHP) when these items were delivered as reinforcers for both long and short durations using a concurrent-chains procedure.

Method

Participants, setting, and materials. Participants were the same as in Experiment 1. Sessions were conducted in an empty room (1 m by 3 m) at the school (Larry) or an empty room (2.4 m by 3.7 m) at the residence (Zed). For Larry, two of the three items for which a discrepancy existed in the ranking across the two MSWO assessments (drawing and a book) were compared in Experiment 2. For Zed, two different items were identified as the high-preference item in the two assessments (i.e., action figures and a compact disc); thus, these two items were compared in Experiment 2. To facilitate discrimination between conditions, signal cards (12.5 cm by 20 cm) with the name of the item and the time that they were available (e.g., "book 15 seconds") were used. Materials also included two different math worksheets (A and B, each consisting of nine identical single-digit addition problems in a different order).

Experimental design. Between the SHP and the LHP stimuli and short (S) or long (L) durations, four combinations of stimuli and durations were generated: SHP-S, SHP-L, LHP-S, and LHP-L. From these four combinations, six experimental conditions for the concurrent-chains procedure were generated: LHP-S and SHP-S, LHP-L and SHP-L, LHP-S and LHP-L, SHP-S and SHP-L, LHP-S and

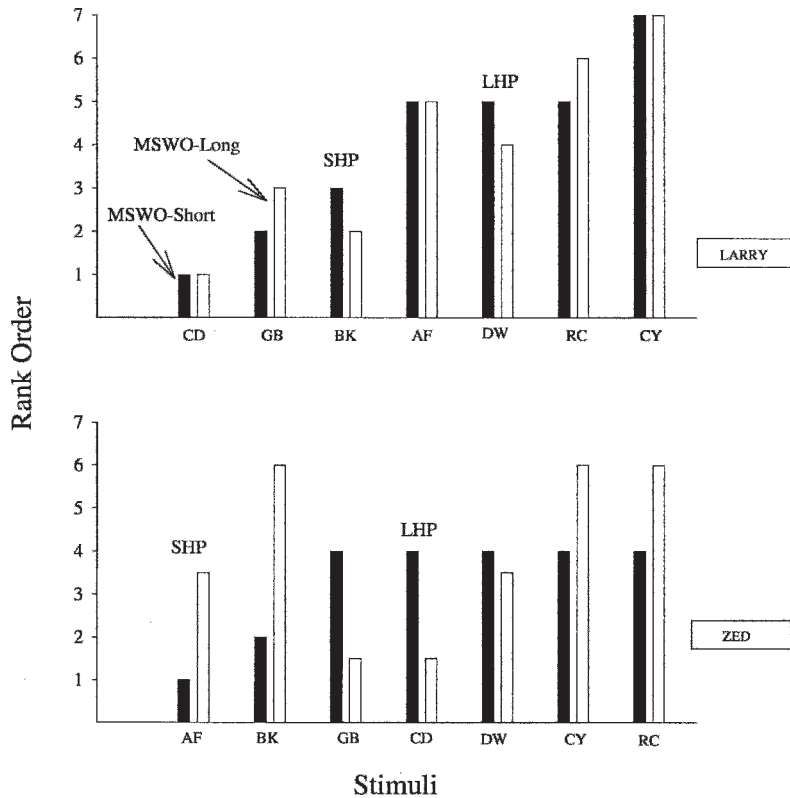


Figure 1. Rank for each stimulus (CD = compact disc, GB = Gameboy®, BK = comic book for Larry and science book for Zed, AF = action figures, DW = drawing materials, RC = Rubik's cube®, CY = clay) in the short and long conditions are displayed as black and white bars, respectively. The stimuli identified as SHP and LHP items for use in Experiment 2 are indicated by boxes.

SHP-L, and LHP-L and SHP-S. The order of conditions was randomly determined for each participant.

Procedure. Pre-session training was conducted prior to each experimental session. In each of four trials, the participant stated the contingencies associated with the card pointed to by the experimenter when presented with two signal cards (randomized across sessions for left-right position), and asked, "What do you get if you pick this card?" Across trials, the participant stated the contingencies in effect for each condition.

Each trial began with the two math worksheets presented side by side (15 cm apart). The positions of the stimulus combinations (left vs. right) and which worksheet corresponded (A vs.

B) were counterbalanced across trials. The participant selected one worksheet (initial link), the other worksheet and associated materials were removed, and reinforcement was available only for completion of the chosen worksheet (terminal link). The schedule of reinforcement for responding on both terminal links was fixed-ratio (FR) 9. An FR 9 was chosen for the terminal link because it approximated the number of math problems the participants typically encountered on one worksheet in their classrooms.

Each session consisted of one to three trials to avoid possible satiation effects of extended sessions. No more than two sessions were conducted per day, one to three times per week. The criterion for changing conditions was

three consecutive trials of choosing the same initial link for a specific stimulus combination.

Interobserver agreement. Interobserver agreement was assessed in 44% and 33% of sessions for Larry and Zed, respectively. Agreement, calculated on a trial-by-trial basis by dividing the number of agreements on which initial link (stimulus combination) was chosen by the number of trials across all sessions and multiplying by 100%, was 100% for both participants.

Results and Discussion

Results of Experiment 2 are depicted in Figure 2. As predicted based on the MSWO-long results, both participants preferred the LHP item over the SHP item when the access time was longer (15 min) for both stimuli in the LHP-L versus SHP-L condition. The SHP item was preferred over the LHP item when access time was brief (15 s), however, for only 1 of the 2 participants (Zed) in the LHP-S versus SHP-S condition. For both participants, the SHP item was preferred for 15-s rather than 15-min access (in the SHP-S vs. SHP-L condition), and the LHP item was preferred when it produced 15-min access rather than 15-s access (in the LHP-S vs. LHP-L condition). It should be noted that performance on two conditions could not be predicted from the MSWO results (the LHP-S vs. SHP-L condition and the LHP-L vs. SHP-S condition). When the LHP item for 15-s access (LHP-S condition) was presented concurrently with the SHP item with 15-min access (SHP-L condition), inconsistent results were shown; Larry preferred the LHP item for 15 s and Zed preferred the SHP item for 15 min. Both participants preferred the LHP item for 15 min relative to the SHP item for 15 s (in the LHP-L vs. SHP-S condition), however.

GENERAL DISCUSSION

Experiment 1 examined the correspondence in preference ranks based on assessments in

which item selections resulted in either brief or extended access to stimuli. These results suggested that assessment outcomes may vary as a function of postselection access duration. Experiment 2 validated the results of the two preference assessments and showed that the preference assessments generally predicted the relative preference of the stimuli across varying time intervals.

A conceptual implication of the current results is that the duration of availability may function as a motivating operation that affects the momentary preference for a stimulus. That is, relative preference for a stimulus may be determined, in part, by the duration for which that item is available. Presumably, the reinforcing properties of a stimulus may be established or abolished by the amount of time for which that stimulus is available. For example, a child may prefer to play a video game when it is available for a more extended period (e.g., 10 min) than when it is available for a shorter period (e.g., 30 s). From a practical perspective, the current results suggest that the duration of postselection access may influence an item's ranking in a preference assessment. That is, a preference assessment with brief access time may produce inaccurate findings if identified high-preference stimuli are subsequently used as reinforcers for longer intervals in the natural setting.

Limitations of the current study include the small number of participants and the inconsistent results obtained in the long and short preference assessments in Experiment 1. Even with the small sample, however, the current study suggests that access time affects preference for at least some stimuli. Future research with more participants is necessary to further evaluate differential preferences based on postselection access time. Another limitation is that the reinforcing effects of the stimuli identified in the two preference assessments were not evaluated in reference to a no-reinforcement (baseline) condition. Thus, conclusions regard-

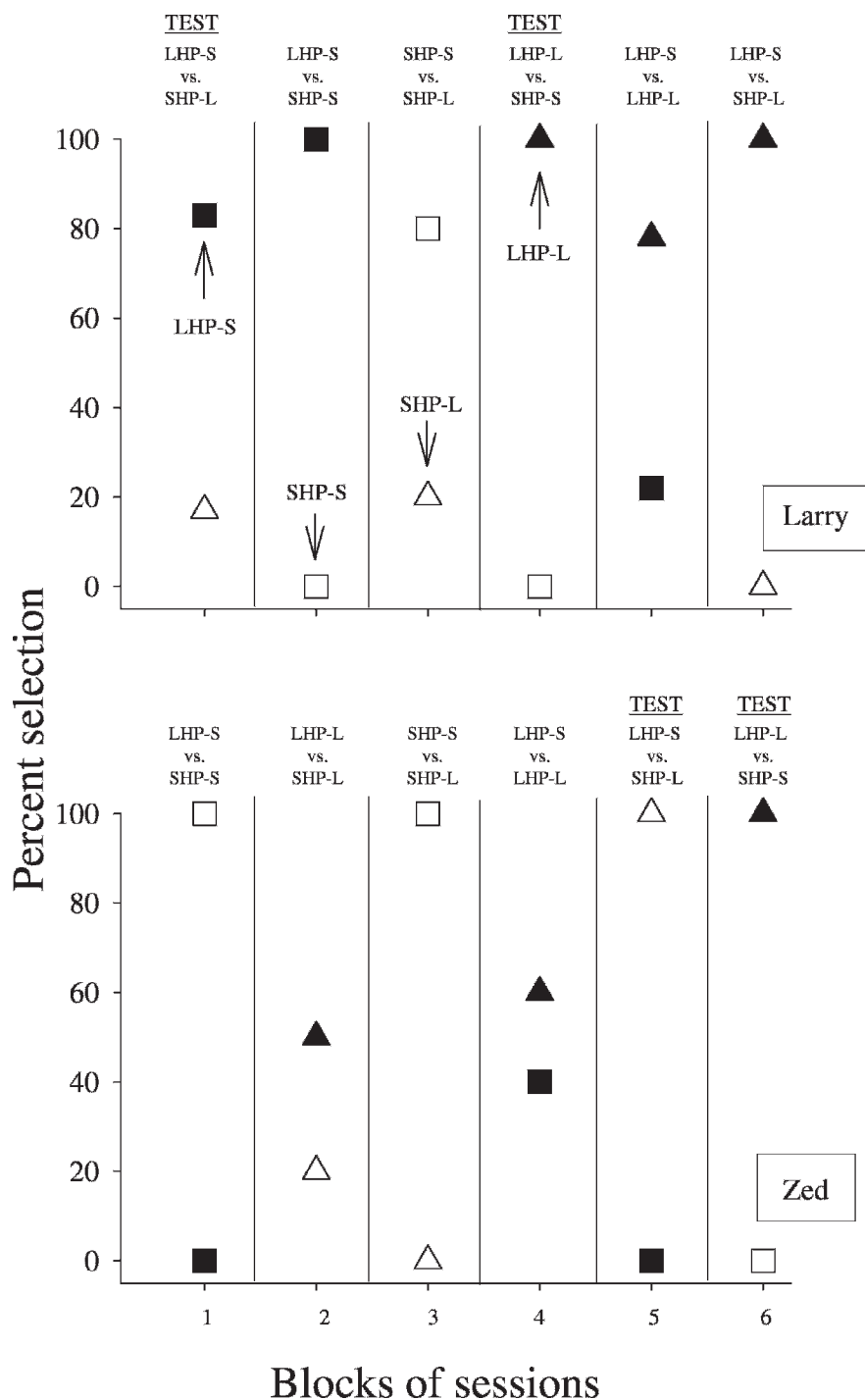


Figure 2. Percentage of trials an initial link was chosen as a function of stimulus and time available for Larry and Zed. SHP-S = high-preference-given-short-access item available for short time (15 s), SHP-L = high-preference-given-short-access item available for long time (15 min), LHP-S = high-preference-given-long-access item available for short time (15 s), and LHP-L = high-preference-given-long-access item available for long time (15 min).

ing the extent to which these assessments identified effective positive reinforcers are limited.

The purpose of preference assessments is to identify items that will function as reinforcers in the clinical or natural setting, and the current study suggests that consideration of the context in which the potential reinforcers will be used may lead to different assessment decisions. If potential reinforcers will be used for brief lengths of time (e.g., 10 to 15 s), brief access to stimuli might be the appropriate assessment context. If, however, potential reinforcers will be used in situations in which greater response requirements must be met before tokens are traded in for longer access to a back-up reinforcer, then longer access to stimuli might be the better assessment context. For optimum clinical utility, an assessment that could identify preferred stimuli given both short and long access times would be ideal. Although not evaluated in the current study, past research has shown that duration measures yield more disparate findings of preference than selection measures do (DeLeon, Iwata, Conners, & Wallace, 1999; Hagopian, Rush, Lewin, & Long, 2001). Future research could determine whether one assessment using duration measures would yield differential stimulus preference hierarchies based on access times. A duration-based preference assessment that provides information on stimuli that function as

reinforcers in different contexts would be both efficient and clinically useful.

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